

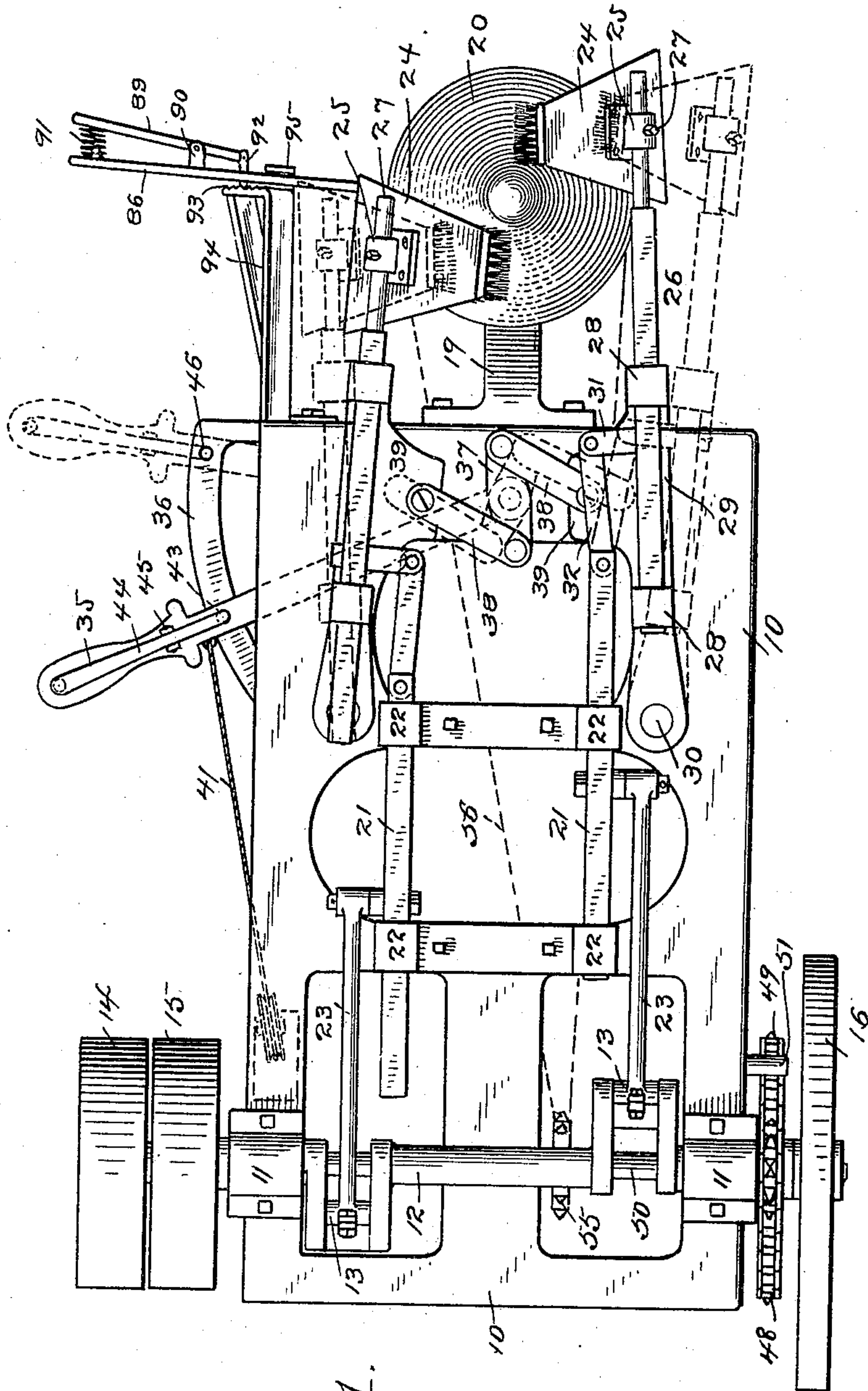
No. 861,546.

PATENTED JULY 30, 1907.

C. M. SNELL.  
MACHINE FOR CLEARING HATS.

APPLICATION FILED JULY 18, 1906.

3 SHEETS—SHEET 1.



WITNESSES  
H. A. Lamb.  
S. W. Atherton.

Fig. 1.

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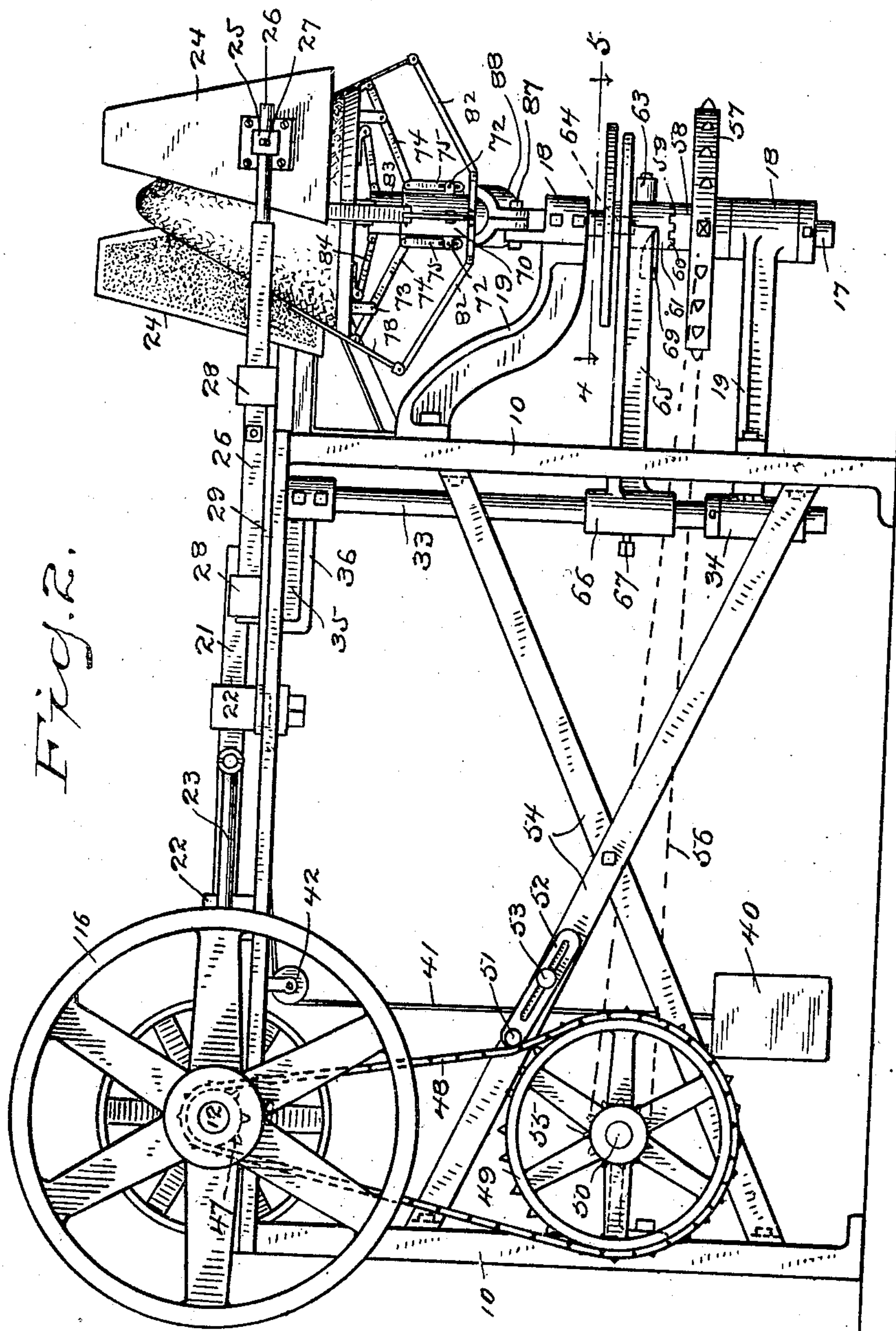
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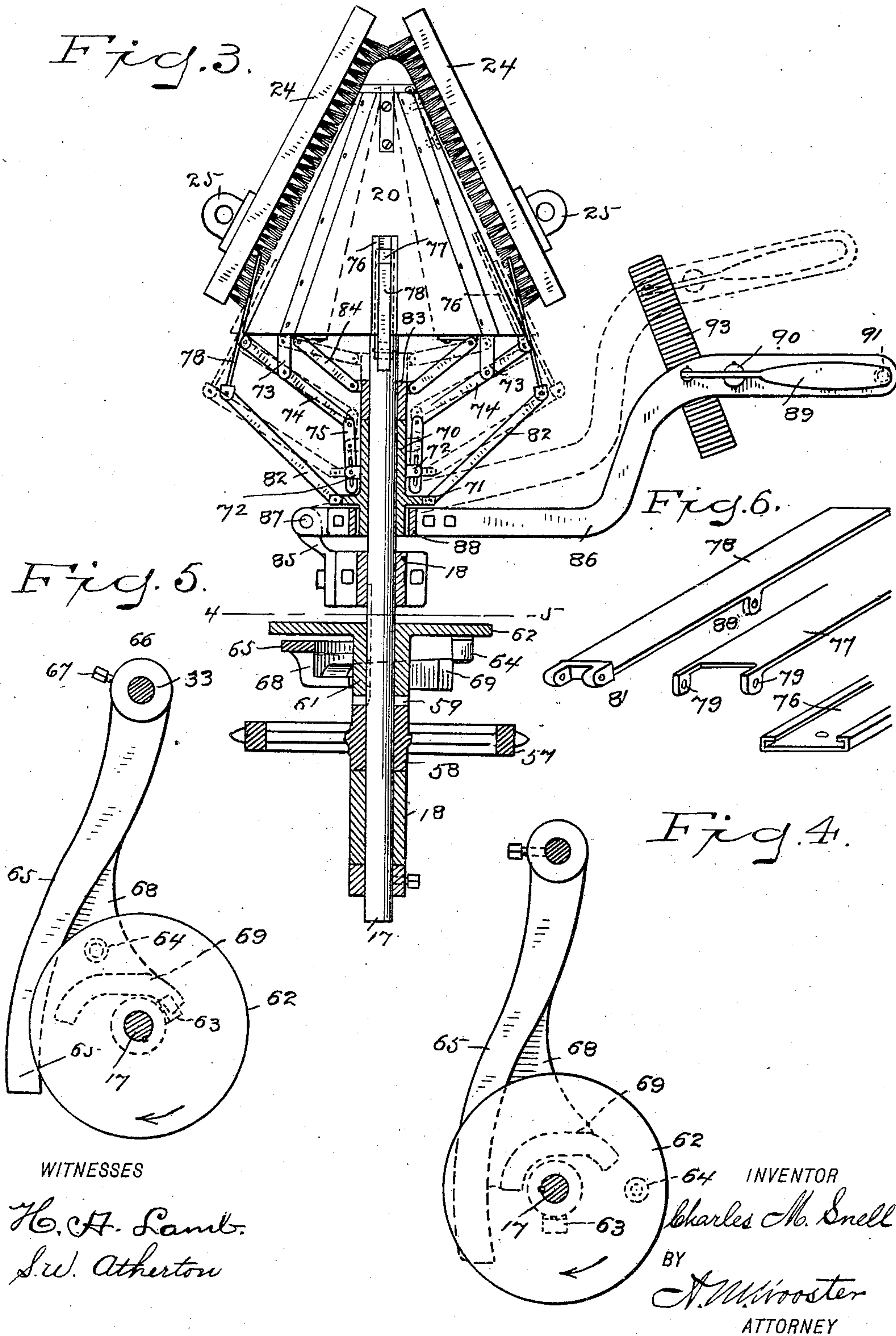


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3 SHEETS—SHEET 3.





# UNITED STATES PATENT OFFICE.

CHARLES M. SNELL, OF DANBURY, CONNECTICUT, ASSIGNOR OF ONE-FOURTH TO FRANK P. FARRELL AND ONE-FOURTH TO HERBERT R. McCHESNEY, OF DANBURY, CONNECTICUT.

## MACHINE FOR CLEARING HATS.

No. 861,546.

Specification of Letters Patent.

Patented July 30, 1907.

Application filed July 18, 1906. Serial No. 326,686.

*To all whom it may concern:*

Be it known that I, CHARLES M. SNELL, a citizen of the United States, residing at Danbury, county of Fairfield, State of Connecticut, have invented a new and useful Machine for Clearing Hats, of which the following is a specification.

This invention relates to the manufacture of felt hats and has particular reference to machines used for brushing or clearing the hat bodies, to smooth the same and remove loose fibers.

The hat bodies are usually stiffened by dipping them in a bath composed of shellac cut with alcohol which leaves the surface of the felt daubed with gum which must be cleaned off in order that the hat may receive a finish to make it smooth and glossy. Heretofore this has usually been done by dipping the hat bodies in an alkaline bath and placing the body on a smooth surface such as a block or bench and scraping with a tool called a trench, or brushing it with a hand brush.

One of the objects of my present invention is to provide a machine employing brushes acting upon the hat body while the latter is slowly rotated, whereby a large amount of time may be saved in the operation of clearing.

Another object of the invention is to provide means whereby the hat body will be drawn down smoothly and tightly upon the hat block.

Other objects of the invention are to simplify the operation of machines of this type and to expedite the use thereof by the attendant, all as will be more fully pointed out hereinafter.

To these ends my invention consists in the construction and combination of parts substantially as hereinafter described and claimed.

Of the accompanying drawings:—Figure 1 is a plan view of a machine embodying my improvements. Fig. 2 is a front elevation thereof. Fig. 3 is a detail view partly in elevation and partly in section, showing the hat block and its shaft and the adjuncts thereof. Figs. 4 and 5 are views taken on the line 4—5 of Figs. 2 and 3 showing some of the parts in different positions. Fig. 6 represents several of the parts of the hat body clamp separated from each other and in perspective.

Similar reference characters indicate the same or similar parts in all of the views.

In carrying out my invention I employ a slowly rotatable expansible cone or hat-block, and in connection therewith two brushes operating on opposite sides of the body, a hat body having been first dipped in the alkaline bath. Preferably I employ reciprocating brushes.

The frame 10 of the machine is provided with bearings 11 for the main shaft 12, the latter having two cranks 13 and provided at one end with belt pulleys

14—15 one of which will be a fast pulley and the other a loose pulley, said shaft being also shown as provided with a fly wheel 16. At the other end of the frame of the machine is the hat-block shaft 17, mounted in bearings 18 supported by suitable brackets 19 projecting from the frame of the machine. The upper end of the shaft 17 is provided with a hat-block 20 which is preferably of the expansible type comprising several sections which may be opened or spread so as to increase the diameter thereof. Such hat-blocks are well known and need not be illustrated or described in detail herein.

Referring to Figs. 1 and 2 two slide bars 21 are shown, said bars being mounted to reciprocate in suitable bearings 22 carried by the top of the frame of the machine. As these two bars and the parts which operate them and are operated thereby are duplicates, a description of one will suffice for the other. Each slide bar 21 is connected by a pitman 23 with a crank 13 so that the rotation of the shaft 12 will reciprocate said bar. Each bar 21 actuates a brush 24, said brush having an ear 25 fitted to the outer end of the brush-rod 26 and held thereon by a set screw 27. The brush-rod 26 is mounted to reciprocate in bearings 28 carried by a swinging carrier 29 pivoted at 30 to the top of the frame. An ear 31 projecting from the rod 26 is connected by a link 32 with the bar 21 so that as the bar 21 is reciprocated, the rod 26 and its brush is also reciprocated. It is of course desirable that the brushes shall be moved away from the hat at the completion of the operation. I shall now describe the means whereby the swinging carriers 29 are actuated so that the brushes will be moved outward to permit the operator to remove the finished hat and substitute another therefor.

A vertical shaft 33 is mounted at its lower end in a bearing 34 supported by the frame of the machine and at its upper end in a suitable bearing afforded by the top web of the frame. Secured to said shaft, near its upper end, is a lever 35, the outer end of which rides upon a segment 36. The upper end of the shaft 33 is provided with a cross-head 37 (see Fig. 1) and said cross-head is connected by links 38 with side portions or wings 39 of the swinging carriers 29. A weight 40 is connected by a cord 41, running over a pulley 42 with the lever 35, said weight having a tendency to normally hold the lever 35 in a full-line position shown in Fig. 1 therefore also holding the swinging carriers in position so that the reciprocations of the brushes will result in the proper operation on the hat body. But when said lever is swung to the dotted line position shown in Fig. 1 the brushes will be swung outward from the hat through the connections afforded by the links 38 and cross-head 37. In order to hold the parts in this position, a locking pin 43 is provided, said pin passing through a hole in the lever 35 and connected with the inner end of a small



lever 44 pivoted at 45 to the lever 35 and having a spring underneath its outer end so as to press said locking pin against the face of the segment 36. The arrangement of the lever 44 and the spring underneath its outer end is similar to the lever 89 and spring 91 shown at the upper right hand corner of Fig. 1 which latter lever and spring will be described hereinafter. The segment 36 is formed with a hole 46 which will receive the locking pin 43 in order to hold the lever 35 against the tendency of the weight 40 to swing it when in the dotted line position shown in Fig. 1.

I shall now describe the connections whereby the hat-block will be rotated at a slow speed as compared with the rotation of the main shaft and the reciprocations of the brushes:—Secured to the main shaft 12 is a small sprocket 47 which is connected by a chain 48 with a relatively large sprocket 49 on a counter shaft 50 which is mounted in suitable bearings carried by the frame. As shown in Fig. 2 I may employ a tightener for the chain comprising a pin or roll 51 carried by a slotted base plate 52 which is adjustably secured to one of the frame braces 54 by a set screw 53. A small sprocket 55 on the counter shaft 50 is connected by a chain 56 with a relatively large sprocket 57 which is loosely mounted on the hat-block shaft 17. The chain 56 is indicated in Figs. 1 and 2 by dotted lines.

The hub 58 of the sprocket 57 is loose on the vertical shaft 17 and is formed with upwardly projecting clutch teeth 59 which cooperate with clutch teeth 60 projecting downward from the hub 61 of a disk 62, said hub 61 being splined to the shaft 17. It will now be understood that since the only driving connection of the sprocket 57 with the shaft 17 is through the clutch teeth 59 and 60 and the hub 61 splined on said shaft, when the disk 62 and its hub 61 are raised so as to separate the clutch teeth, rotation of the hat-block will cease although the brushes may continue to reciprocate. As will be presently described, however, the brushes are automatically separated or spread apart to the position indicated by dotted lines in Fig. 1 when the said clutch teeth are separated.

Mounted on a pin projecting outward from the hub 61 is a roller 63 (see Figs. 2, 4, & 5), and projecting downward from the disk 62 is a pin having a roller 64, said two rollers being spaced from each other about 90 degrees.

An arm 65 having a hub 66 is secured to the adjusting shaft 33 by means of a set screw 67 (see Figs. 2, 3, 4, & 5). Said arm is formed with a web 68 the outer edge of which is provided with a cam rib 69. The arm 65 is so secured to the shaft 33 that it will occupy substantially the position shown in Fig. 4 when the lever 35 is in the position shown by full lines in Fig. 1. This is the position of operation of the machine, that is, when the hat-block is rotated and the brushes are reciprocating in contact with the hat. As has been stated, the hat-block and its shaft rotate at a comparatively slow speed. The direction of the rotation is indicated by arrows in Figs. 4 and 5. As said shaft rotates the roller 63 reaches the lower end of the cam rib 69 and rides up the same so that the disk 62 and its hub will be elevated and the clutch teeth 60 separate from the driving clutch teeth 59. This disconnects the power so that the rotation of the hat-block will cease. But before the clutch teeth are completely separated the roller 64 carried by the

disk engages the side of the arm 65 and shifts it to the position shown in Fig. 5. This movement of the arm 65 actuates the shaft 33 sufficiently to move the cross-head 37 at the upper end of the shaft to the dotted line position shown in Fig. 1 resulting in throwing out or spreading the brushes. At the same time, the lever 35 is thrown over until the pin 43 engages the hole 46 in the segment and locks the parts in the dotted line position of Fig. 1. The roller 64 has sufficient power in swinging the arm 65 to shift the lever 35 against the tension of the weight 40, lifting said weight.

When the parts are in the position last described, the finished hat will be removed and another one substituted therefor. Then the attendant operates the small latch lever 44 to disengage the locking pin 43 and then the weight 40 will either of itself or aided by the attendant return the lever 35 and the brushes to operative position shown by full lines in Fig. 1.

I shall now proceed to describe the clamp or pulling devices which draw the hat down upon the expandible hat-block and hold it stretched during the brushing operation:—

As best shown in Fig. 3 a sleeve 70 is mounted on the shaft 17 said sleeve having a flange 71. Ears 72 project from the said sleeve above the flange 71 and ears 73 depend from the sections or segments of the hat-block. Levers 74 pivoted to the ears 73 are connected by links 75 with the ears 72 of the sleeve 70. In practice there will be a lever 74 and a link 75 for each section of the hat block and each clamp hereinafter described.

Secured to the lower portion of the face of each hat-block section is a way 76 (see also Fig. 6). Mounted to slide in each way 76 is a plate 77 which forms the inner and shorter member of the sliding clamp. Another plate 78 which constitutes the outer and longer member of the clamp is provided with ears 80, and the member 77 is provided with ears 79. The ears 80 of the member 78 fit between the ears 79 of the member 77 and the four ears of these two members are connected by a suitable pivot pin with the outer end of the lever 74 so that as the levers 74 are oscillated as hereinafter described, both members of each clamp will be given a sliding movement along the way 76. The lower end of each member 78 is provided with ears 81 which are connected by a link 82 with the flange 71 of the sleeve. A collar 83 is mounted on the shaft 17 above the sleeve 70 and is connected by links 84 with the sections of the hat-block. These expansible hat-blocks usually comprise four sections. There will therefore be four sets of the levers and links and clamps just described, one set for each section.

I shall now proceed to describe the means for raising and lowering the sleeve 70 so as to close the clamps upon the lower edge of a hat body and then move said clamps downward to stretch the hat body over the block:—

Projecting from the bearing 18 is a lug or bracket 85 to which a hand lever 86 is pivoted at 87. Said hand lever is provided with a ring 88 surrounding the sleeve 70 below the flange 71 so that when said lever is lifted it will raise the sleeve and shift the same and the links and levers from the position indicated by full lines in Fig. 3 to the position indicated by dotted lines in said figure. To retain the hand lever in its raised position I may employ a latch lever such as indicated



at 89, said latch lever being pivoted at 90 to the lever 86 and having a spring 91 under its outer end. The other end of the latch lever is connected with a locking pin 92 which passes through a hole in the lever 86 and engages a rack 93 suitably supported as by a bracket 94 extending from the frame of the machine as shown in Fig. 1. To hold the lever 86 in its proper position so that the locking pin will always remain in engagement with the rack, I may employ a suitable guard strip such as indicated at 95 in Fig. 1. Spring 91 acts upon the latch lever 89 so as to hold the locking pin in engagement with the rack but the locking pin may be freed from the rack at any time by the attendant grasping both the levers 86 and 89.

When the parts are in the positions indicated by full lines in Fig. 3 the upper ends of the members 78 of the clamps are thrown somewhat outward from the base of the hat-block so that the lower edge of the hat body can readily be inserted between them and the inner member of the clamps. Then upon raising the lever 86 to the dotted line position the lifting of the sleeve 70 causes the links 82 to thrust outward the lower ends of the members 78 of the clamps and close the upper ends of said outer members down upon the fabric. At the same time the upward thrust of the links 75 causes the levers 74 to oscillate on their pivots so that the ends of said levers act to pull or slide both members of each clamp downward thereby drawing the hat body firmly down upon the block. Also at the same time, the upward thrust of the sleeve 70 on the collar 83 acts through the links 84 to expand the sections of the hat-block as will be readily understood.

The outer members of the clamps are of sufficient resilience to permit the sleeve 70 to be moved upward for some little distance after the clamps have closed upon the fabric so that the latter part of the movement of the sleeve 70 and of the levers and links will act to draw the clamps downward along the ways 76 as described. When this has been done the parts are left in the position shown by the dotted lines in Fig. 3 until the brushing operation is completed, after which the attendant releases the locking pin 92 and permits the parts to return to the full line positions. In the meantime the brushes 24 will have been separated from the hat body so that it can be removed.

In Fig. 3 the brushes are represented as in their operative position relatively to the hat-block. As shown in said figure, the bristles at the upper ends of the brushes are longer than the others so as to make contact with the hat body at the extreme apex thereof.

Having described the operations of the several parts of the machine in connection with the description of the construction thereof, further reference to the operation of the machine as a whole will not be necessary.

Having now described my invention I claim:—

1. A hat clearing machine comprising a rotatable hat support having fixed bearings, means for rotating said support, a pair of brushes on opposite sides of said support, and means for moving said brushes in opposite directions toward and from the support.
2. A hat clearing machine comprising a rotatable hat support having fixed bearings, means for rotating said support, a brush mounted to reciprocate in contact with one side of a hat mounted on said support, said brush being also pivotally mounted to swing toward and from the hat, means for reciprocating the brush, and means for swinging said brush.

3. A hat clearing machine comprising a rotatable support for the hat, a pair of reciprocating brushes to act upon a hat on said support, means for reciprocating the brushes, and means for automatically removing the brushes from the hat when rotation of the support ceases.

4. A hat clearing machine comprising a rotatable support for the hat, reciprocating brushes adapted to act upon a hat on said support, means for reciprocating the brushes, swinging supports for said brushes, and means for swinging the brush supports outward at the completion of rotation of the hat support.

5. A hat clearing machine comprising a rotatable support for the hat, a swinging carrier mounted on the frame of the machine, a brush mounted to slide lengthwise of said swinging carrier, and means for reciprocating the brush on said swinging carrier.

6. A hat clearing machine comprising in its construction a pair of swinging carriers mounted on the frame of the machine, means for swinging said carriers, rods carrying brushes and mounted to slide on said swinging carriers, means for reciprocating said brush rods, and a rotatable hat support.

7. A hat clearing machine comprising in its construction a rotatable hat support, reciprocating brushes adapted to act upon a hat body on said support, the said brushes having bristles to act upon the apex of the hat body longer than the bristles which act upon the sides of said body, means for reciprocating said brushes, and means for swinging said brushes.

8. A hat clearing machine comprising in its construction a shaft having cranks, slide bars, connections between said slide bars and the cranks of the shaft, swinging carriers mounted upon the frame, rods mounted to slide on said carriers and having brushes, an oscillating shaft having a cross-head, links connecting said cross-head with the swinging carriers, and means for actuating the oscillating shaft and its cross-head to cause the brushes to approach or recede from each other.

9. A hat clearing machine comprising in its construction a shaft having cranks, slide bars, connections between said slide bars and the cranks of the shaft, swinging carriers mounted upon the frame, rods mounted to slide on said carriers and having brushes, an oscillating shaft having a cross-head, links connecting said cross-head with the swinging carriers, a lever connected with said shaft, means for automatically throwing said lever in one direction and a locking device for holding the lever at its limit of movement in the other direction.

10. A hat clearing machine comprising in its construction a shaft having cranks, slide bars, connections between said slide bars and the cranks of the shaft, swinging carriers mounted upon the frame, rods mounted to slide on said carriers and having brushes, an oscillating shaft having a cross-head, links connecting said cross-head with the swinging carriers, a lever connected with said shaft, a weight connected with said lever for shifting it in one direction, and a locking device for holding the lever at its limit of movement in the other direction.

11. A hat clearing machine comprising a shaft having a hat support, a main driving shaft, means for driving the first mentioned shaft at a slow speed relatively to that of the main shaft, brushes mounted to reciprocate in parallel planes transverse to the axis of the hat support adapted to act upon a hat supported by the first mentioned shaft, and connections whereby said brushes are reciprocated at each revolution of the main shaft.

12. A hat clearing machine comprising in its construction a vertical shaft having a hat support, a sprocket wheel loose on said shaft, means for continuously driving said sprocket wheel, the hub of said sprocket wheel being formed with clutch members, a hub splined on said shaft and having clutch members to cooperate with the clutch members of said sprocket, and means for automatically dis-engaging said clutch members on the completion of a rotation of the shaft.

13. A hat clearing machine comprising in its construction a vertical shaft having a hat support, a sprocket wheel loose on said shaft, means for continuously driving said sprocket wheel, the hub of said sprocket wheel being formed with clutch members, a hub splined on said shaft and having clutch members to cooperate with the clutch



members of said sprocket, means for automatically disengaging said clutch members on the completion of a rotation of the shaft, said means comprising an oscillating arm having a cam, and means whereby said arm is automatically oscillated.

14. A hat clearing machine comprising in its construction a vertical shaft having a hat-block, clamps connected with said hat-block, and movable to pull the hat downward means for actuating said clamps to cause them to grasp the hat and pull it down on the block, and brushing mechanism for clearing the hat on said block.
15. A hat clearing machine comprising in its construction a vertical shaft having a hat-block, means for brushing a hat on said block, a sleeve mounted on said shaft, movable clamps mounted on the block, connections between said sleeve and the clamps for opening and closing the latter and shifting them up and down on said block, and means for adjusting said sleeve lengthwise of the shaft.
16. A hat clearing machine comprising in its construction a vertical shaft having an expansible hat-block, clamps movably connected with the sections of said block, means for expanding the block and actuating the clamps to cause them to grasp the hat body and pull it down on said block, and means for clearing said hat body.
17. A hat clearing machine comprising in its construction a vertical shaft having an expansible hat-block, clamps slidably connected with the sections of the block, a sleeve mounted on said shaft, means for shifting said sleeve on the shaft, link and lever connections between said sleeve and the clamps for actuating them, and means for expanding and contracting the hat-block.
18. A hat clearing machine comprising in its construction a vertical shaft having an expansible hat-block, clamps slidably connected with the block, a sleeve mounted on said shaft, a collar on the shaft above the sleeve, links

connecting said collar and the sections of the hat-block, link and lever connections between the sleeve and the clamps for actuating the latter, and means for actuating the sleeve and collar.

19. A hat clearing machine comprising in its construction a vertical shaft carrying a hat-block, a disk splined on said shaft and having its hub provided with clutch members and having also two pins or rollers, a driving wheel loosely mounted on the shaft and having clutch members to cooperate with the said clutch members of the hub of the disk, a swinging arm having a cam rib adapted to cooperate with one of the said rollers to cause the disengagement of the clutch members, the other roller being adapted to act upon said arm to swing it, and means for manually actuating said swinging arm.

20. A hat clearing machine comprising in its construction a vertical shaft carrying a hat-block, a disk splined on said shaft and having its hub provided with clutch members and having also two pins or rollers, a driving wheel loosely mounted on the shaft and having clutch members to cooperate with the clutch members of the hub of the disk, a swinging arm having a cam rib adapted to cooperate with one of the said rollers to cause the disengagement of the clutch members, the other roller being adapted to act upon said arm to swing it, brushes to act upon the hat body, means for reciprocating said brushes, swinging supports for the reciprocating brushes, and connections whereby the disk roller acting upon said swinging arm will actuate the swinging carriers of the brushes.

In testimony whereof I affix my signature, in presence of two witnesses.

CHARLES M. SNELL.

Witnesses:

FRED N. WILDMAN,  
HENRY M. ROBINSON.